Tag	Attributes	Text	Description
<cli>	-	-	Contains zero or more modes
<mode>	name	-	Contains zero or more command tags. Attribute is required.
<command>	-	-	Contains a required keyword tag.
<keyword>	text	-	Contains zero or more keyword tags, with an optional action or help tag. Attribute is required.
<help>	-	Yes	May be embedded in keyword or arg elements.
<action>	object method	-	Contains zero or more arg tags. The attributes are required.
<arg>	-	-	Contains a single instance of type tag, may contain a help tag.
<type>	Type	-	Empty tag. Attribute is required, must be a valid java type.

105 110 115 120 125 130 135 140

FIGURE 1

200 ~ Command> show clock
[illegible]

205 ~ Command> show clock detail
*04:10:18.109 UTC Thu May 6 1999
Time source is user configuration

210 {

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE cli SYSTEM "cli.dtd">
<cli>
<mode name="global">
....
<command>
    <keyword text="show">
    <help>Show running system information</help>
.... <!-lots of other show keywords... -->

        <keyword text="clock">
            <?help>display the system clock</help>
            <action object="Clock" method="show">
            </action>

            <keyword text="detail">
                <help>Display detailed information </help>
                action object="Clock" method="showDetail">
                </action>
            </keyword>
        </keyword>
    </keyword>
  </command>
  </mode>
  </cli>
```

212 ~

215 ~

FIGURE 2

```
Command   clock set
hh:mm:ss Current Time
```
321

```
Command > clock set hh:mm:ss
<1-31> Day of the month
MONTH Month of the year
```
322

```
Command > clock set 00:00:00 25 Sep
<1993-2035> Year
```
323

```
Command > clock set 00:00:00 25 Sep 2000

Command >
```
324

```
<command>                                          317
   <keyword text="clock">
      <help>Manage the System clock</help>
      <keyword text="set">                         328
         <help> Set the time and date</help>
         <action object="Clock" method="set">      329
            <arg> <!-time argument -->
               <type type="java.land.String"></type>
               <help>hh:mm:ss Current Time </help>  330
            </arg>
            <arg> <!-day of the month argument -->
               <type type="java.lang.Integer"></type>
            <help>&lt;1-31&gt; Day of the month</help>  335
            </arg>
            <arg> <!-day of the month argument -->
               <type type="java.lang.Integer"></type>
               <help>MONTH Month of the year </help>  340
            </arg>
            <arg> <!-year argument -->
              <type type="java.lang.Integer"></type>
              <help>&lt;1993-2035&gt; Year</help>  345
            </arg>
         </action>
      </keyword>
   </keyword>
</command>
```
325

FIGURE 3

09/25/2000 - 08:00 PM

```
<?xml version='1.0' encoding='us-ascii"?>
<!—DTD for the cli description file -->

        <!—The cli tag is the topmost element. Contains zero or more modes. -->
<!ELEMENT cli (mode*)>

        <!--The mode tag contains zero or more command tags. The mode must
        have a name, for example "global", "exec", "config" -->
<!ELEMENT mode (command*)>
<!ATTLIST mode
        name CDATA #REQUIRED
>

        <!—The command tag contains a single keyword -->
<!ELEMENT command (keyword)>

        <!--The keyword tag contains zero or more subkeywords, with an optional
        single instance of action or help. The single attribute is the keyword test
        which must be present -->
<!ELEMENT keyword ((keyword)*, action?, help?)>
<!ATTLIST keyword
        test CDATA #REQUIRED
>

        <!-- The action tag contains zero or more argument tags. The "object"
                        and "method" attributes must be present and defined"
<!ELEMENT action (arg*)>
<!ATTLIST action
        object CDATA #REQUIRED
        method CDATA #REQUIRED
>

        <!-- The arg tag contains a single instance of a type tag and an
        optional help tag -->
<!ELEMENT arg (type, help?)>

        <!-- The type tag is an empty tag with a required attribute "type". The
        value of the attribute should be a Java class name -->
<!ELEMENT type EMPTY>
<!ATTLIST arg
        type CDATA #REQUIRED
>

        <! -- The help tag enloses some text -->
<!ELEMENT help (#PCDATA)>
```

FIGURE 4

Docket No. 50277-0004

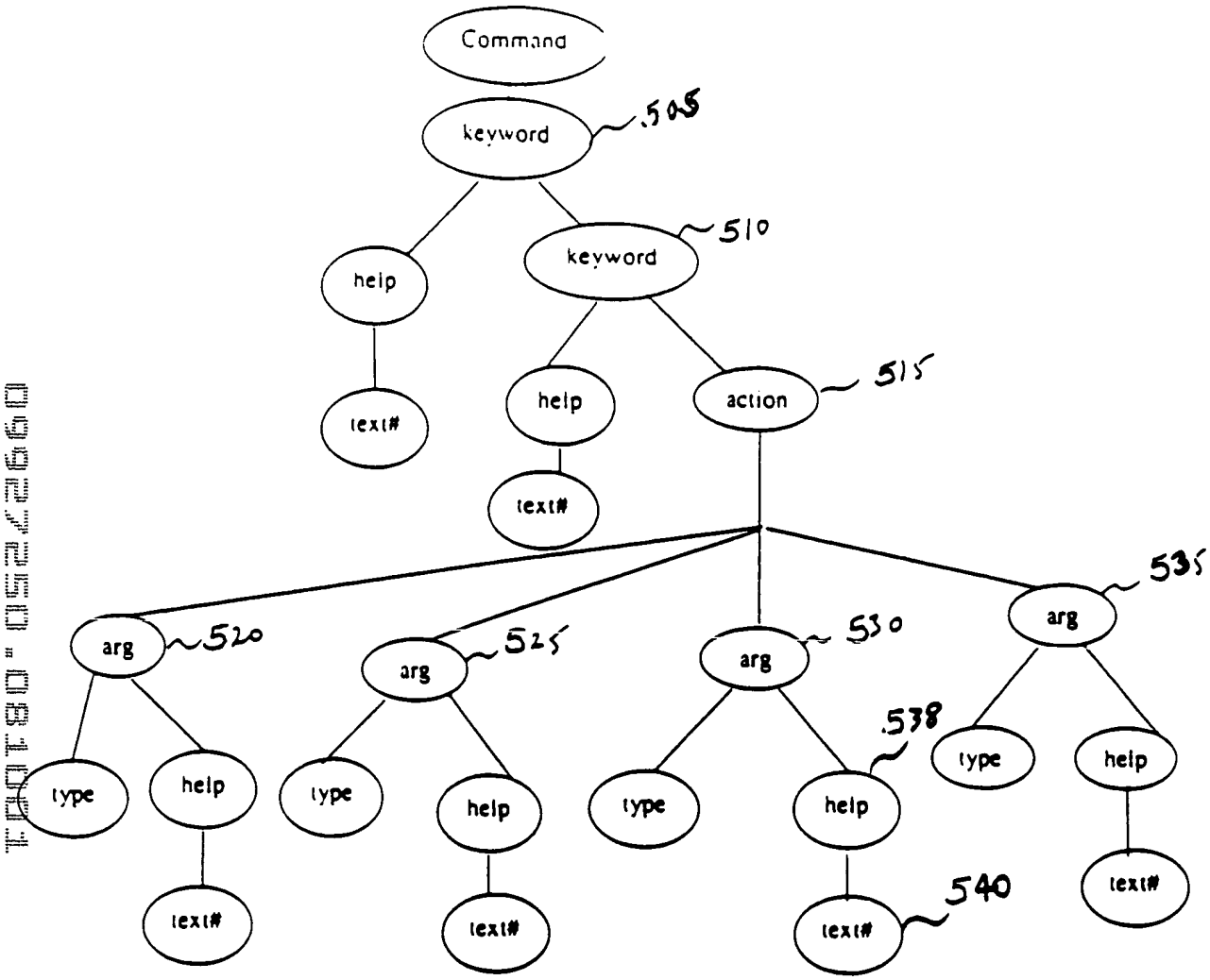

Command
keyword
505
help
keyword
510
text#
help
action
515
text#
arg
520
arg
525
arg
530
arg
535
type
help
type
help
type
help
type
help
text#
text#
538
text#
540

FIGURE 5

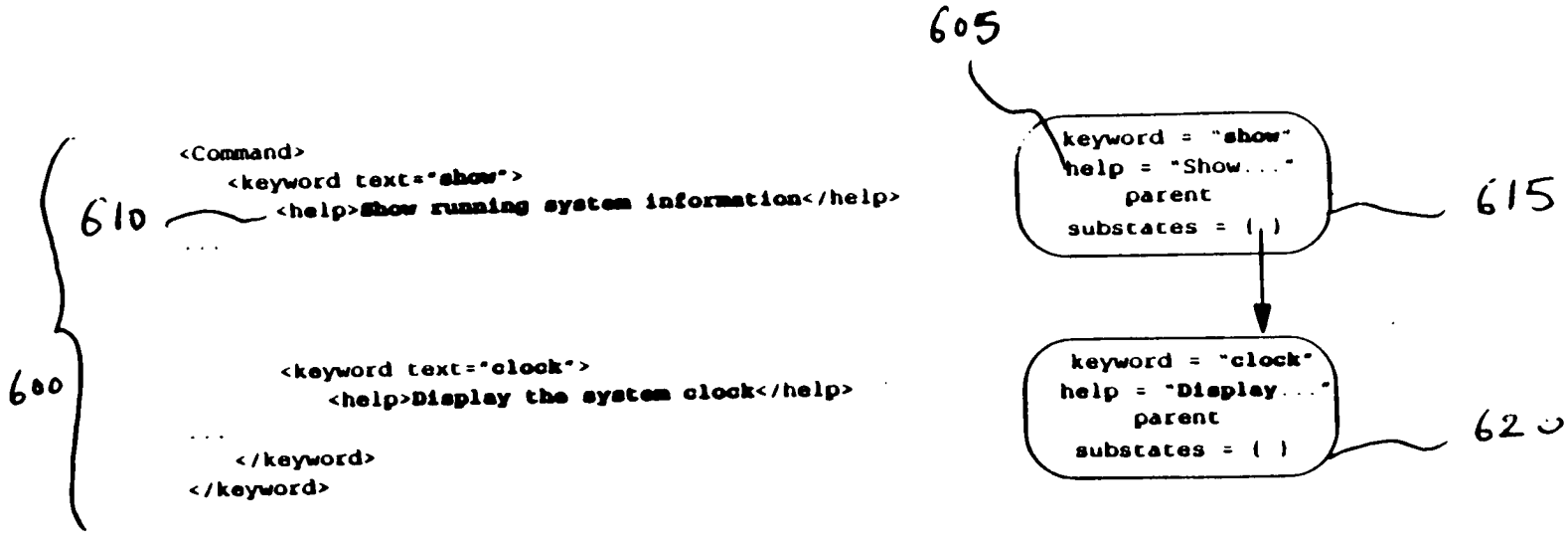

<Command>
<keyword text="show">
<help>Show running system information</help>
...
<keyword text="clock">
<help>Display the system clock</help>
...
</keyword>
</keyword>
600
610
605
keyword = "show"
help = "Show..."
parent
substates = ( )
615
keyword = "clock"
help = "Display..."
parent
substates = ( )
620

FIG. 6

```
<keyword text="FastEthernet">
    <help>FastEthernet IEEE 802.3</help>
        <action object="ethManager" method="show>
            <arg>
                <type type="java.lang.String"><type>
                <help>
                    &lt;0-6&gt; FastEthernet interface number
                </help>
            </arg>
        </action>
</keyword>
```

700

```
keyword = "FastEthernet"
help = "Fast..."
parent
substates = ( )
action
```

710

712

```
object_name = "ethManager"
method_name = "show"
argument_types = ("java.lang.String")
argument_help = ("<0-6> Fast...")
```

714

716

718

720

FIG. 7

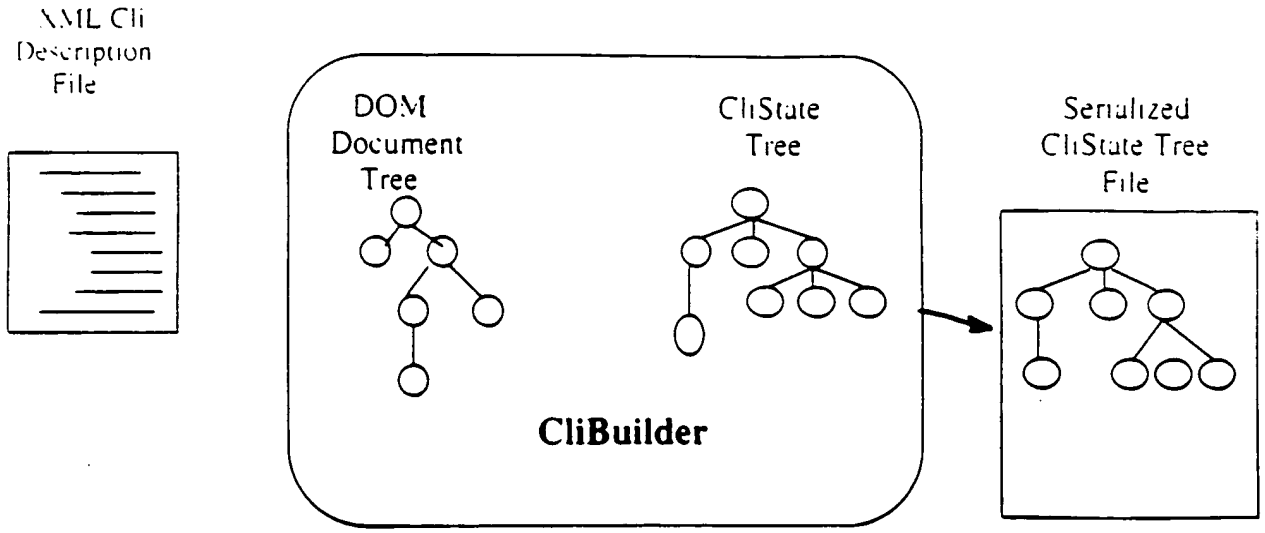


FIGURE 8

1005-0005-0005-0004

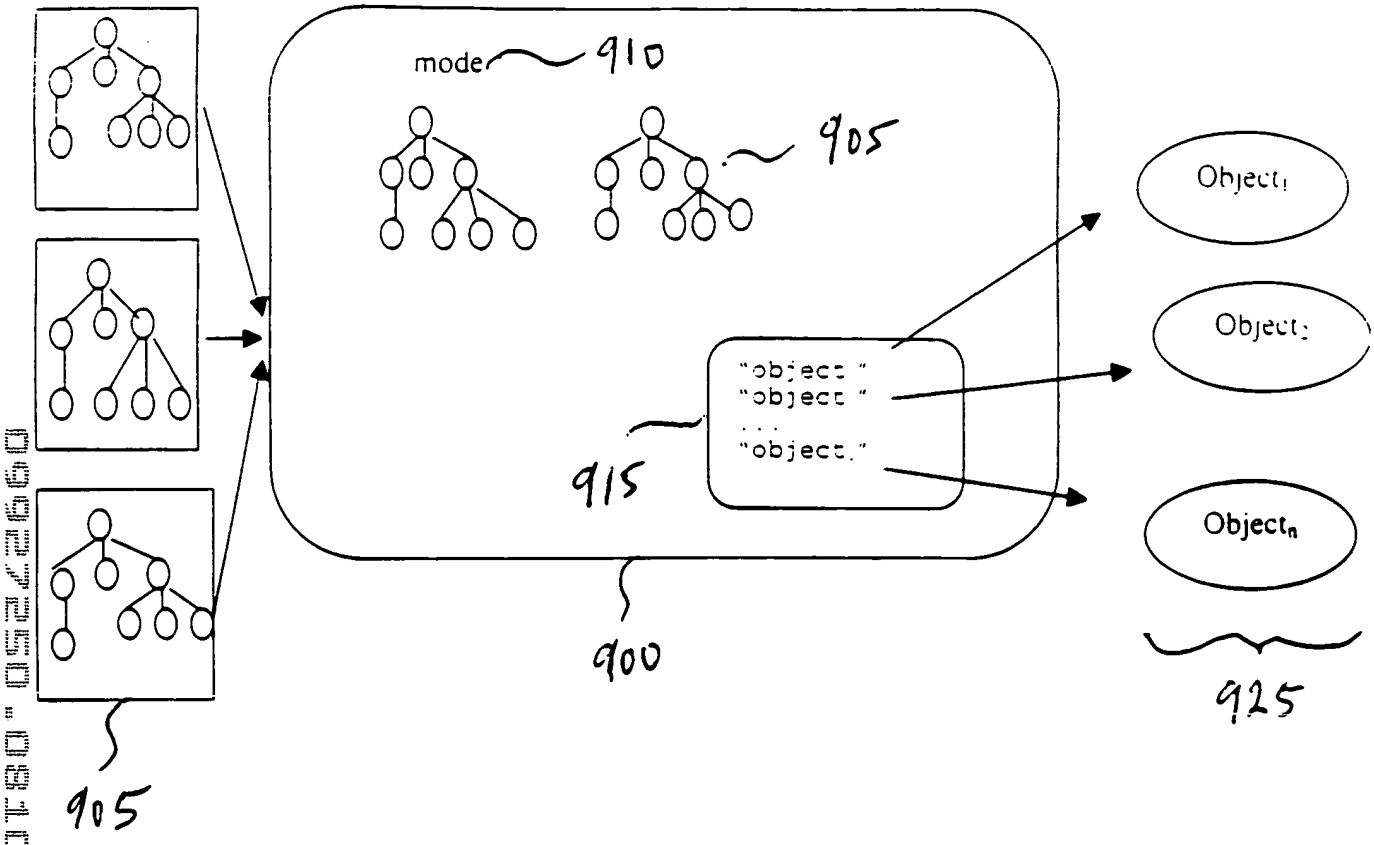

mode
910
905
915
900
905
925
"object "
"object "
...
"object."
Object1
Object2
Objectn

FIGURE 9

Docket No. 50277-0804

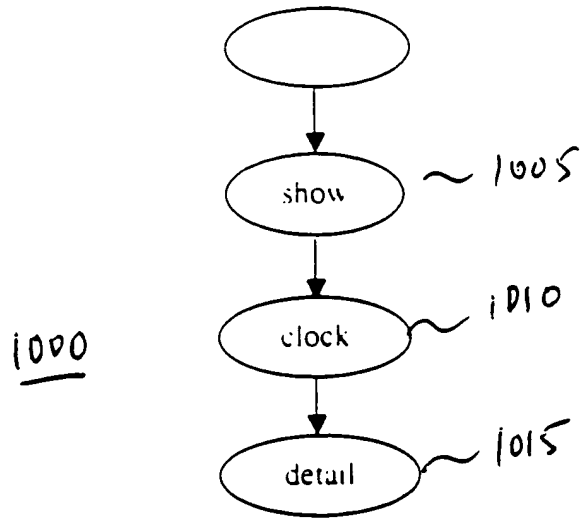


FIGURE 10

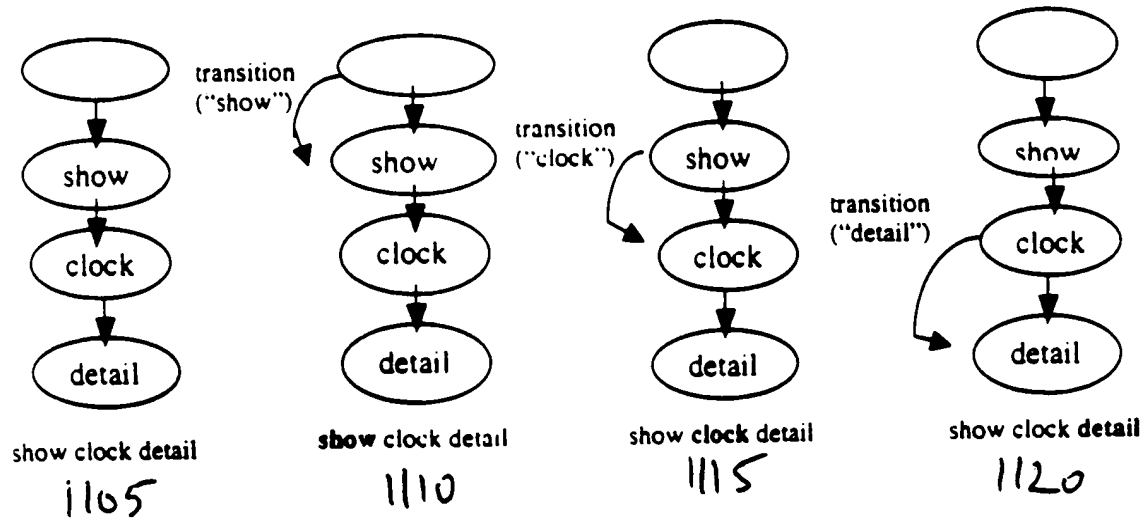
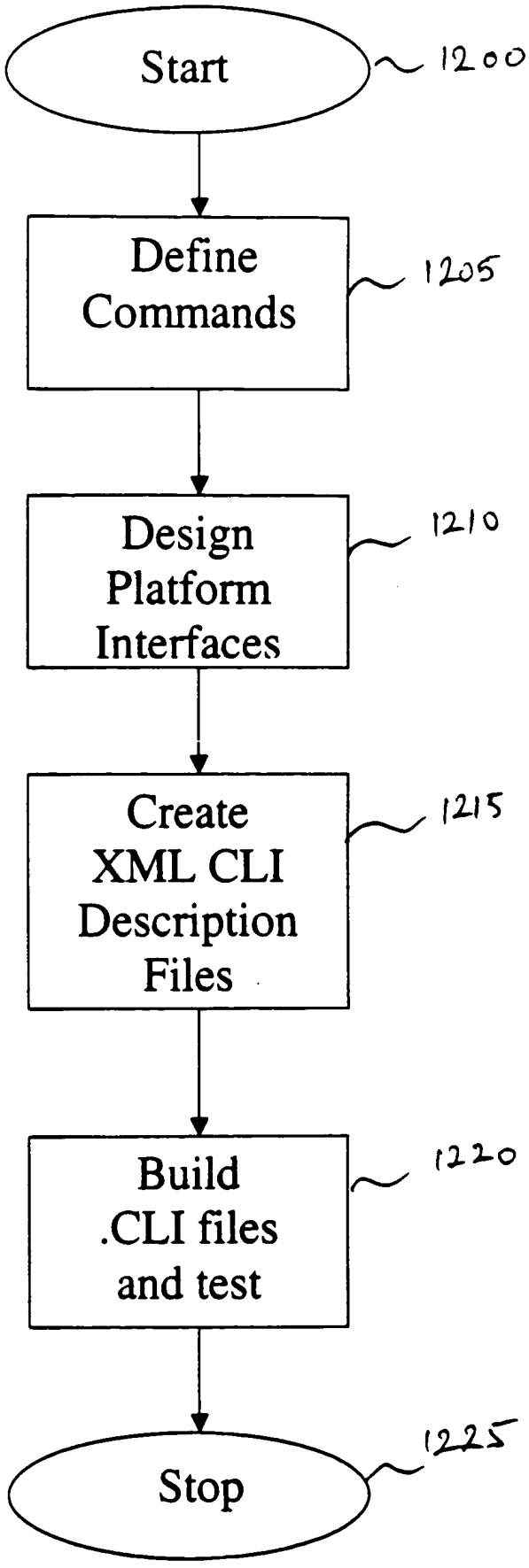


FIGURE 11

FIGURE 12


Start
1200
Define Commands
1205
Design Platform Interfaces
1210
Create XML CLI Description Files
1215
Build .CLI files and test
1220
Stop
1225

Command	Keyword Set
show date	{"show", "date"}
show date detail	{"show", "date", "detail"}
clock set	{"clock", "set"}

1305 ~ 1310

FIGURE 13

Argument Number	Argument Description	Argument Help
1	Time in 00:00:00 format	hh:mm:ss Current Time
2	day of the month in integer format	<1-31> Day of the month
3	month in three letter format	MONTH Month of the Year
4	Year in integer format	<1993-2035> Year

FIGURE 14

Command Keyword Sequence	Help
show	Show running system Information
clock	Manage the system clock
show clock	Display the system clock
show clock detail	Display detailed information
clock set	Set the time and date

FIGURE 15

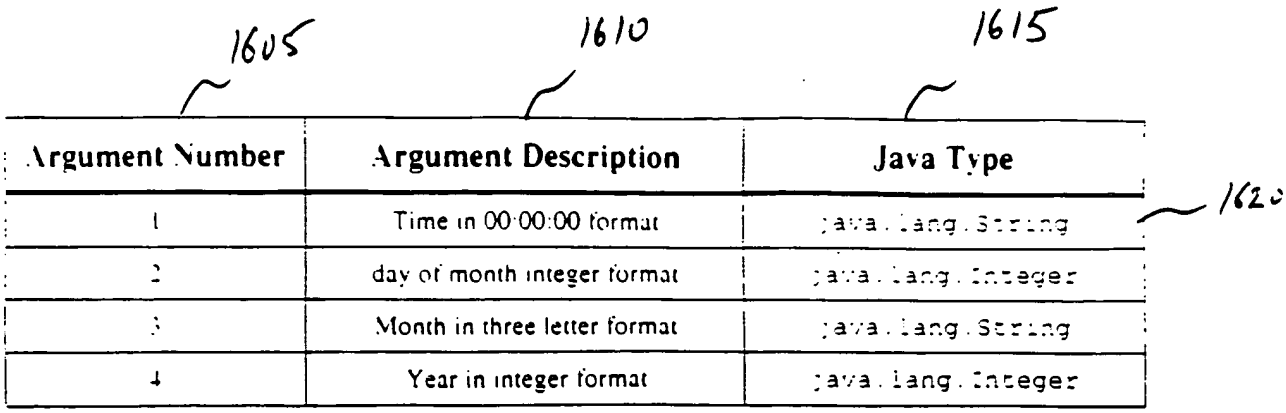


FIGURE 16

Docket No. 50277-0804

```
<?xml version='1.0 encoding='US-ASCII' ?>
<! DOCTYPE cli SYSTEM "cli.dtd">
<cli>
<mode name="exec">

<command>
      <keyword text="show">
      <help>Show running system information</help>
       .... <!--lots of other show keywords... -->

                  <keyword text="clock'>
                  </help>Display the system clock </help>
                  <action object="Clock" method= "show">
                  </action>

                  <keyword text="detail">
                  <help>Display detailed information</help>
                  action object="Clock" method="showDetail">
                  </action>
                  </keyword>
        </keyword>
</command>
```

FIGURE 17

```
<command>
        <keyword text="clock"
        <help>Manage the System clock</help>

            <keyword test="set">
            <help> Set the time and date</help>
            <action object="Clock" method="set">

                <arg><!-- time argument -->
                <type type="Java.land.String"></type>
                <help>hh:mm:ss Current time</help>
                </arg>

                <arg> <! -- day of the month argument -->
                <type type="Java.land.Integer"></type>
                <help>&1t;1-31&gt; day of the month</help>
                </arg>

                <arg> <! -- day of the month argument -->
                <type type="Java.land.Integer"></type>
                <help>MONTH Month of the year</help>
                </arg>

                <arg> <! -- year argument -->
                <type type="Java.land.Integer"></type>
                <help>&1t;1993-2035&gt; Year</help>
                </arg>

            </action>
            </keyword>
        </keyword>
    </command>
```

FIGURE 18

```
public void show ()  {
    SimpleDateFormat formatter =
        new SimapleDateFormat ("hh:mm:ss.SSS zzz EEE
MMM dd yyyy");
    System.out.println("*" + formatter.format
(new Date()));
}

public void showDetail ()  {
    this.show();
    if (Clock.source())
        System.out.println ("Time source is user
configuration");
    else
        System.out.println ("No time source");
}
```

FIGURE 19

```
public void set (String time, Integer day, String month, Integer year)
        throws IOException, InterruptedException, CLIArgumentException
        {
            // Validate the arguments
            SimpleDateFormat format = new SimpleDateFormat ("hh:mm:ss);
            format.setLenient (false);
            try { format parse (time)
            } catch (ParseException e) {
                throw new ArgumentException (1);
            }

            if (day.intValue() < 1 || day.intValue() > 31)
                throw new ArgumentException (2);

            format.applyPattern ("MMM");
            try { format.parse(month);
            } catch (ParseException e) {
                throw new ArgumentException (3);
            }

            if (year.intValue() < 1993 || year.intValue () > 2035
                throw new ArgumentException (4);

            // One last check for day, month and year validity (e.g., Feb 31)
            format.applyPattern ("dd MMM yyy");
            try { format.parse(day.toString() + month + year.toString());
            } catch (parseException e) {
                CLIEngine.out.println("Invalid date (doesn't exist)");
                Return;
            }

            // Do the actual work
        String [] cmd = {"/bin/date", "-s", time + "" + day + " " + month + " " + year
                        };
            Process proc = Runtime.getRuntime().exec (cmd);
            proc.waitFor();
            if (proc.exitValue() > 0) {
            CLIEngine.err.println("Operation not permitted");
                return;
            }

            clock.sourceSet();
        }
```

FIGURE 20